

Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Effects of Coexistent Normal and Supercurrent in SNS Josephson Junctions M.S. CROSSER, Michigan State University, NORMAN O. BIRGE, Michigan State University — Injecting normal current into a superconductor/normal metal/superconductor (SNS) Josephson junction via another lead attached at the middle of the junction, creates a non- equilibrium situation in which a π -junction can be created [1]. In this three-terminal geometry, one side of the SNS junction has both normal and supercurrent flowing in the same direction while the other side has opposing current flows. This situation creates an effective energy gradient across the SNS junction, which appears in the distribution function of the normal wire [2]. We will present experimental measurements of the distribution function using tunneling spectroscopy with a superconducting probe. The distribution function exhibits oscillations near zero energy, which change sign under reversal of the supercurrent direction. [1] J. Huang et al., Phys. Rev B 66, 020507 (2002). [2] T.T. Heikkila et al., Phys. Rev. B 67, 100502 (2003). *Supported by NSF DMR-0104178 and 0405238.

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Date submitted: 04 Dec 2004

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